Satisfying DoD Contract Reporting With Agile Artifacts

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Environment

- MIL-STD-1521B, the FAR, and DFAR are based on waterfall life-cycle stages for technical reviews and contract reporting, and have specific contract metrics and reporting requirements

- "Agile concepts have been around for decades. In recent years, Agile matured and personnel became skilled in applying Agile; some DoD contractors started to build internal Agile capabilities and use Agile on DoD programs. Many DoD acquisition programs have also begun to propose and use Agile processes, attempting to take advantage of contractor capabilities; however, they have done this without (as yet) any formal DoD guidance, templates, or best practices."

    (Source: Considerations for Using Agile in DoD Acquisition, April 2010, SEI)

- How can proven Agile practices and principles be applied to projects that are not software-centric?
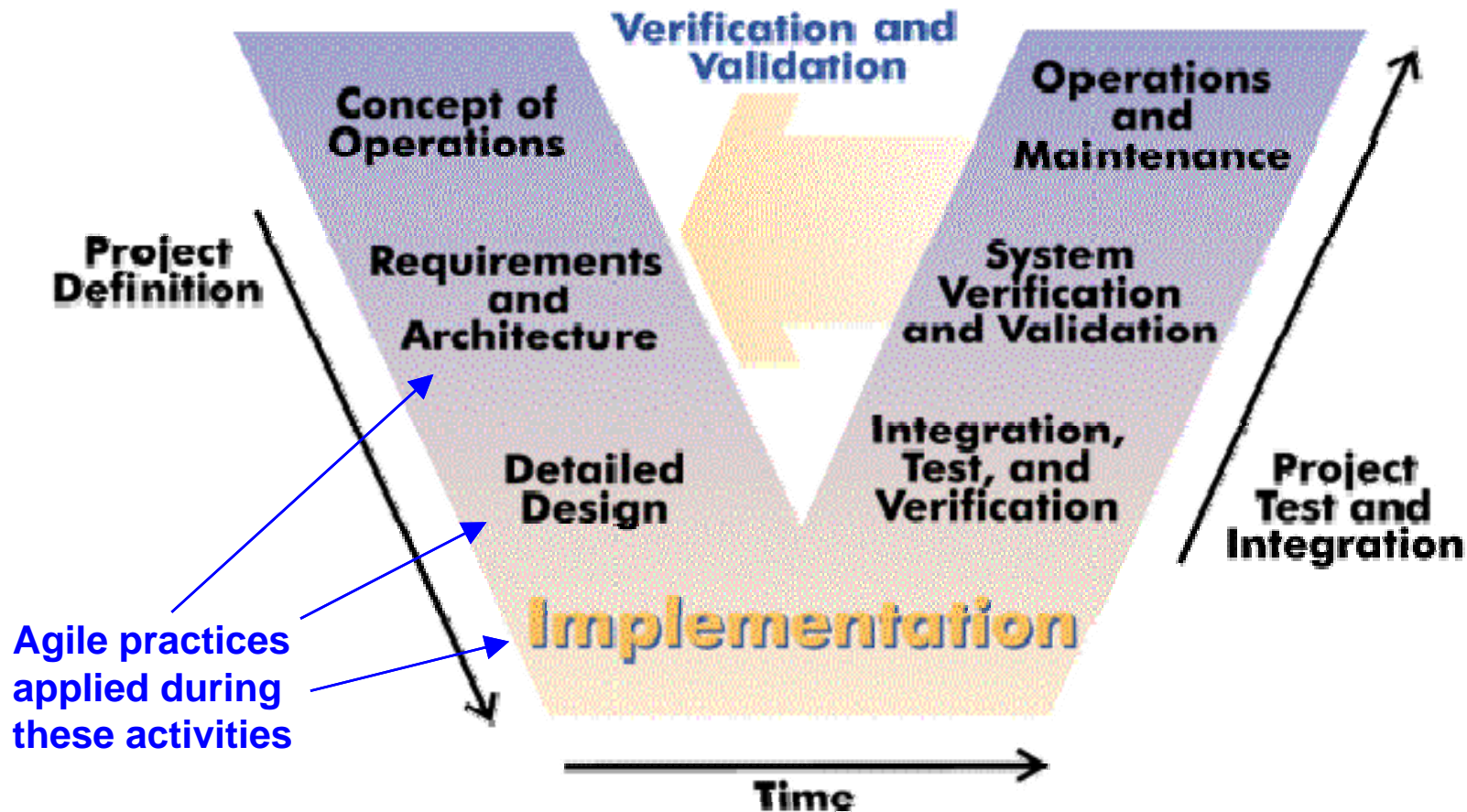   - Boeing experience implementing Agile system engineering activities

Overview

- In the context of this presentation "Agile Systems Engineering" or AgileSE is limited to the definition and development of requirements for software systems

- We will identify specific systems engineering activities to which Agile was applied

- We will also include recommendations for applying Agile for project execution

- What will not be included is production relating to assembly and manufacturing and contractual impacts
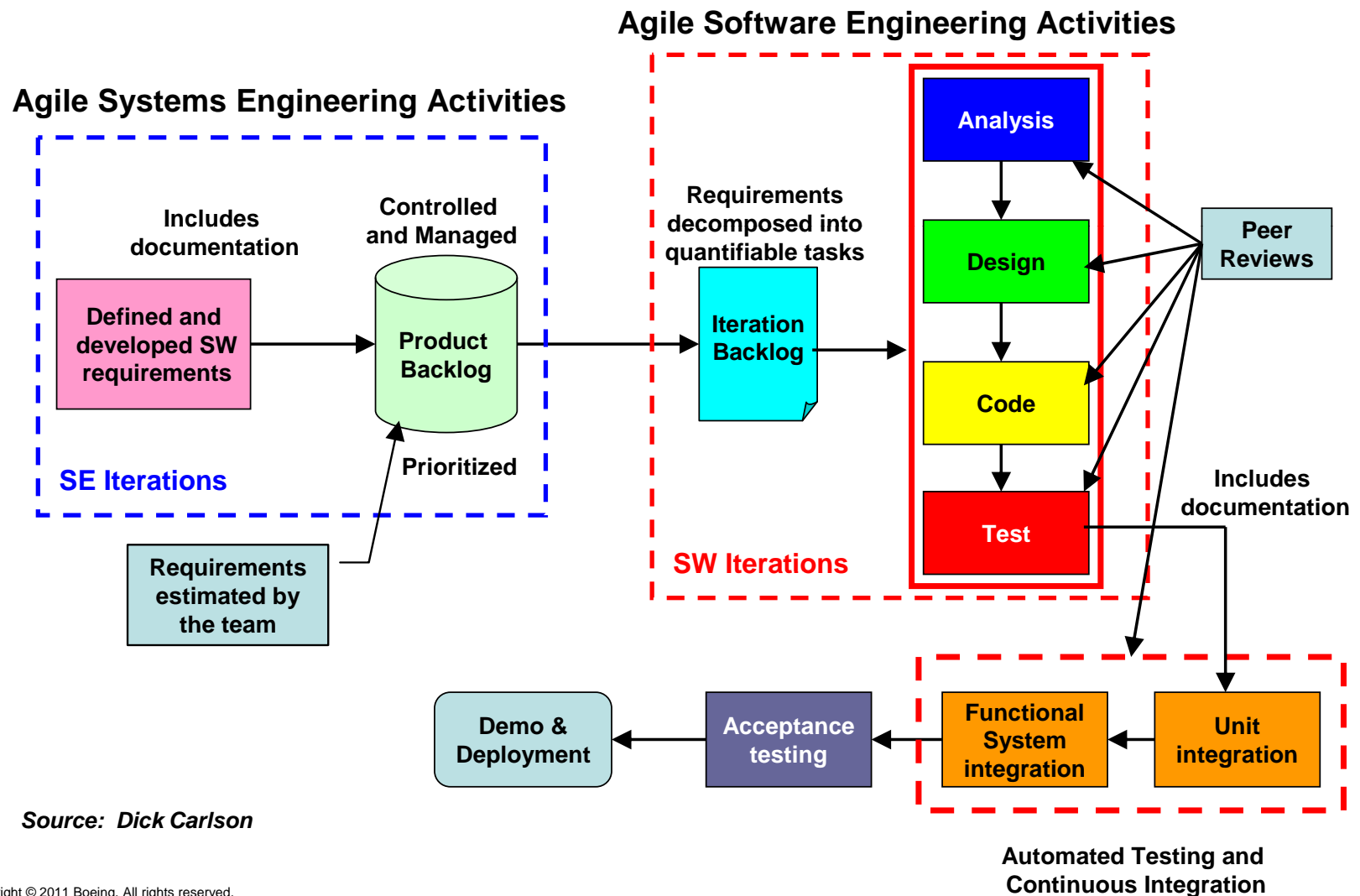
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Verification and Validation

Concept of Operations

Operations and Maintenance

Project Definition

Requirements and Architecture

System Verification and Validation

Detailed Design

Integration, Test, and Verification

Project Test and Integration

Implementation

Agile practices applied during these activities

Time

Source: http://www.thefullwiki.org/V-Model

Agile SE/SW Experience Model

Agile Software Engineering Activities

Agile Systems Engineering Activities

Includes documentation

Controlled and Managed

Defined and developed SW requirements

Product Backlog

Prioritized

SE Iterations

Requirements estimated by the team

Requirements decomposed into quantifiable tasks

Iteration Backlog

Analysis

Design

Code

Test

Peer Reviews

Includes documentation

SW Iterations

Demo & Deployment

Acceptance testing

Functional System integration

Unit integration

Source: Dick Carlson

Automated Testing and Continuous Integration

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Getting Started

- Conduct an assessment to determine if implementing Agile adds or reduces risk. For example:
  - Is the customer willing to actively participate, i.e. requirements clarification, product demos, incremental development?
  - Will there be regular and frequent customer communication?
  - Would the customer be willing to drive and prioritize requirements?
  - Is the customer willing to provide frequent feedback on items completed?

- If Agile can be applied with minimal risk, then train team in Agile

- Request an Agile coach be assigned to the project

- Focus more on planning than developing plans

Implement Simple Agile Practices

- Empower teams to self-manage and self-organize

- Close customer collaboration

- Daily stand-up meetings

- Planning and estimating

- Short iterations

- Prioritize requirements

- Artifact reviews – demonstrate functional prototypes

Source of "Agile": www.agilealliance.org

Prioritize Activities & Work Products

- Complete most important stuff first

- Lean out verbose documentation

- Defer architectural and design decisions until needed

- Verify all completed items

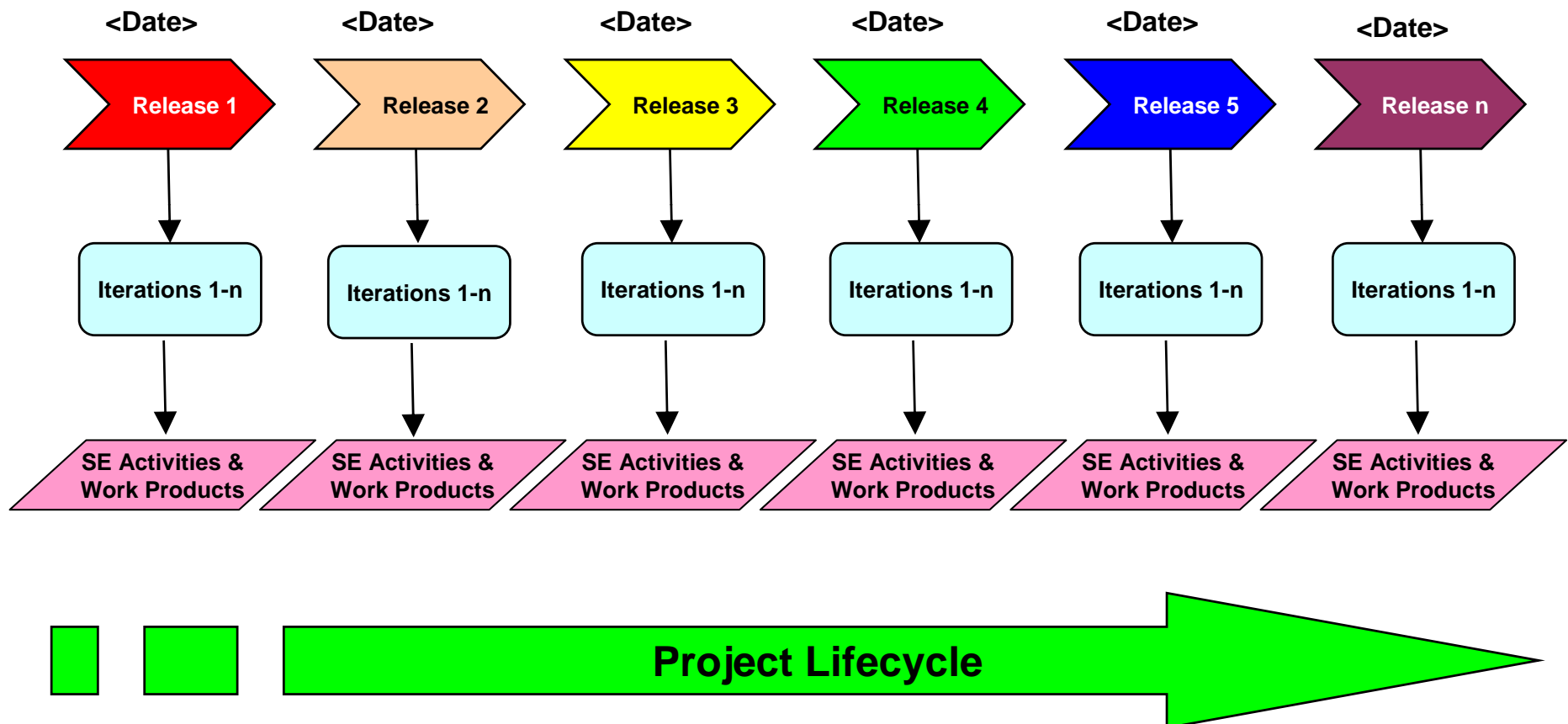- Review completed items with key stakeholders

Establish a Vision

A vision that encourages and supports:

- Customer Satisfaction
- Frequent Delivery
- Motivated Team
- Working Software
- Technical Excellence
- Emergent Design
- Embracing Change
- Collaboration
- High Bandwidth
- Sustainable Pace
- Simplicity
- Continuous Improvement

Create a Project Roadmap

Source: Dick Carlson

Document Your Agile Approach

- Plan a release strategy through a series of short iterations to complete work products

- Use simple Agile modeling techniques

- Conduct daily standup meetings to identify previous work completed, what needs to be completed next, and any impediments

- Hold iteration reviews at the end of every iteration with key stakeholders

- Conduct team retrospectives to identify what worked well and improvement opportunities

Establish a Viable Release Plan

- Identify artifacts that will be developed incrementally

- Explain the importance of active customer involvement and feedback

- Elaborate through the project's Agile approach

- Obtain customer approval

- Distribute to everyone!

- Update often

Enlighten Your Customers

- Talk to them – let them know there is a viable alternative to the waterfall model (3 ways to do this)
  - Respond to a proposal need for Agile
  - Pre-proposal – recommend an Agile approach
  - Post-proposal – provide examples and show them how

- Identify the importance of their role in product development

- Train them on how to do this

- Get them to actively participate in the development validation process – their feedback is vital!

- Develop an accurate and meaningful release strategy

Meet Customers Half-Way

Project Milestone Reviews

Source: Dick Carlson

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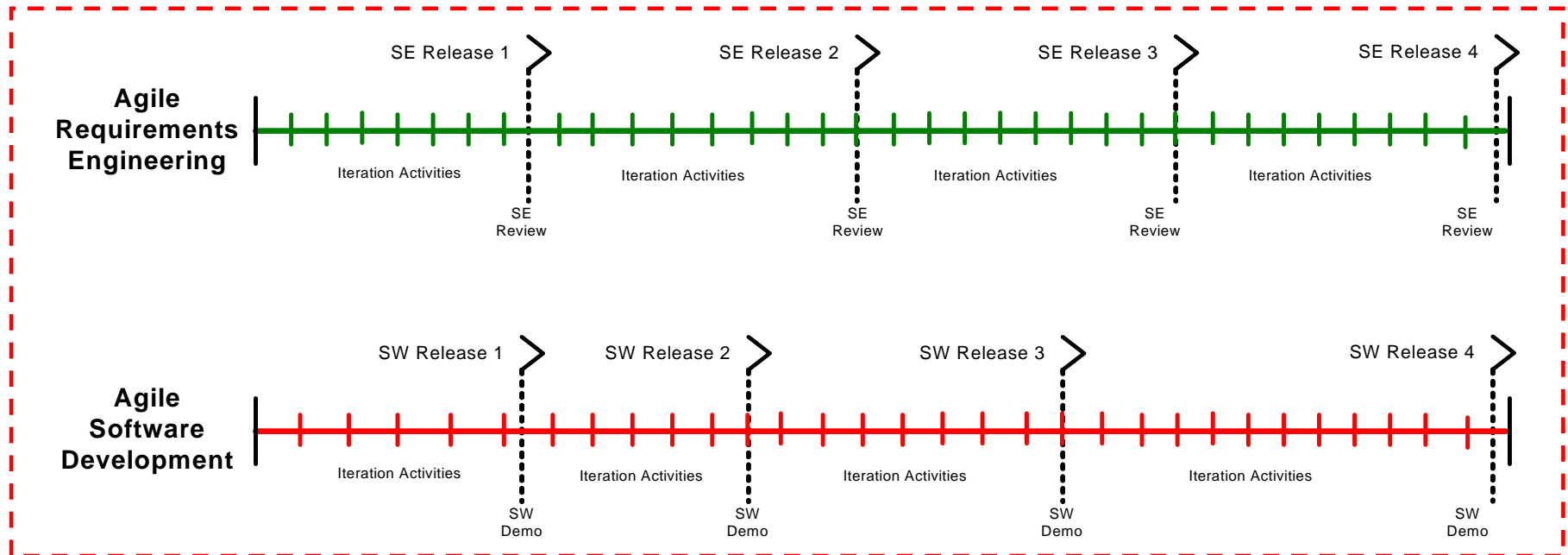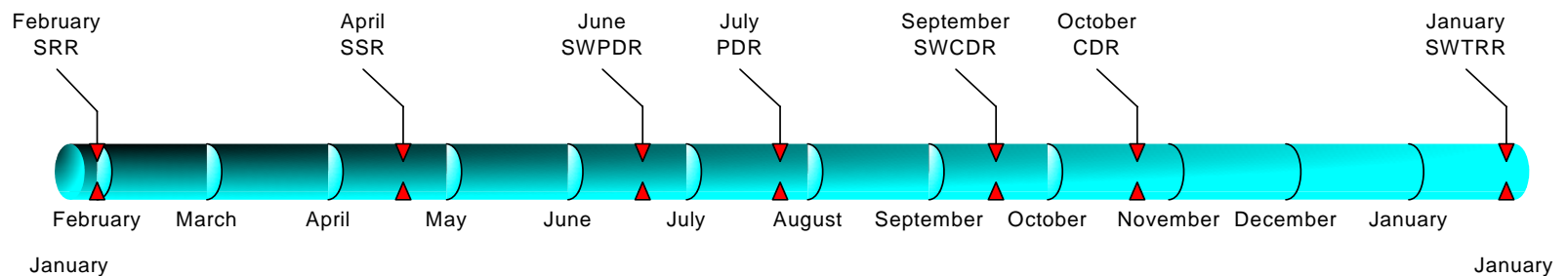
Make Everything Transparent

- Measure performance, productivity and quality

- Keep all work visible to everyone

- Announce all activities

- Celebrate successes!